

STAT
STAT

P 102

DOCUMENT NO. _____
CHANGE IN CLASS. ☒
DECLASSIFIED
CLASS. CHANGED TO: TS S C
REVIEW DATE: _____
REVIEWER: 007169

August 14, 1953

STAT

INTERIM REPORT, PROJECT 2-319-E

A series of discussions have been held with key personnel of this department on the material pertinent to this project. It has been decided that complete nomenclature and definitions must be settled before any tabular data can be compiled.

Nomenclature and definitions are being obtained by interviewing the chief engineers and personnel in similar positions in those instrument companies whose products are of interest to this project. Calls have been made at various private and governmental laboratories who are cognizant of this type of instrument. Extensive conversations have been held with personnel at the Office of Basic Instrumentation, National Bureau of Standards.

It may be generally concluded that there is little agreement within the industry as to nomenclature and definitions.

The criteria for establishing the relative merits of various transducers are being drawn up. This listing will represent a composite of the ideas expressed by various leaders in industry and governmental agencies.

During the period for which this project has been active catalog data of commercially available transducers has been gathered in addition to that already available to this department. This material is currently kept sorted for easy reference but as yet no detailed examination has been undertaken.

In planning the compilation of the desired data it has been decided to avoid the almost endless listings which would result from the inclusion of a heading for applications of the various transducing elements. This is felt to be within the province of the engineer who is to use the evaluation here undertaken.

The principal divisions to be found in this data are:

a. The physical parameters to be measured, such as pressure, temperature, humidity, acceleration, etc., are being compiled with only such overlap as is considered essential for clarity. For example, displacement and dimension may be considered analogous but will be listed as separate headings in this category.

Interim Report

Page 2

b. The translating principle which changes the physical quantity into the form needed by the electrical transducer. For example, a pressure cell using a potentiometric element consists of a cavity into which the pressure is introduced; one wall of this cavity is flexible in the form of a diaphragm or bellows which will yield under the variation of pressure; the movement of this wall is coupled to the movable contact on the potentiometer which then produces a variation in output across the appropriate terminals of the transducer. A thermometric transducer which employs a bimetallic element to move the electrical transducer is another example. From the foregoing it will be evident that the tabular data pertaining to primary translating elements is directly associated with the physical quantity being measured.

c. The transducer principle which changes the partially converted data into an electrical signal whose output may be telemetered. Basically, these may be divided into two groups: those which are self-generating and those which require external excitation or energy inputs. Of the first type moving coil dynamic units, thermocouples, electrokinetic cells and similar devices are illustrative examples. Physically actuated potentiometers, variable reluctance transformers and resistance strain gages are examples of the second type.

The most applicable method of compiling this data in its final form is being investigated. Several systems of card indexing for manual and/or automatic sorting are under consideration.

Submitted by:

STAT

STAT